UNITED STATES PATENT AND TRADEMARK OFFICE

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EXAMINER
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ART UNIT	PAPER NUMBER
2614	

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Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	09/893,825	FAIBISH ET AL.
	Examiner	Art Unit	
	Chris Parry	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>20 September 2005</u>.
2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>2-14 and 16-26</u> is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) <u>2-14 and 16-26</u> is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.
10)☒ The drawing(s) filed on <u>20 September 2005</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a)☐ All   b)☐ Some * c)☐ None of:
      1.☐ Certified copies of the priority documents have been received.
      2.☐ Certified copies of the priority documents have been received in Application No. _____.
      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.
4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other: _____.

DETAILED ACTION

Response to Arguments

1.   Applicant's arguments with respect to claims 2, 9, and 16 have been considered but are moot in view of the new ground(s) of rejection. In response to applicant's argument that Mizutani does not teach "the sets of data movers include a set consisting of more than one data mover for servicing one very popular movie, a set consisting of one data mover for servicing only one movie, and a set consisting of one data mover for servicing a plurality of the movies" the examiner respectfully disagrees. Although figure 16 is shown as prior art, it is referenced for the purpose to visually show the fact that it is notoriously well known in the art to use a server or "data mover" to service one very popular movie and a server or "data mover" to service a plurality of movies. Mizutani improvement of figure 16 is merely just the ability to copy contents from one server to the next so as enough resources are available for services to be provided. Mizutani keeps the overall set-up of servers. In response to applicant's arguments that Mizutani does not teach "negotiation between the video server and the client" the examiner respectfully disagrees. Mizutani teaches delivering video server determining means 22a receives the initial request from the client. If it is determined that the requested content cannot be delivered to the client, the client is notified that the content is unavailable (Col. 8, lines 52-56) and this rejection serves as a notice to the client to make another selection of content. Mizutani teaches "negotiation between the video server and the client" by the client exchanges information in the form of a request with the video server and the video server provides the client with a rejection notice, which provides a

conclusion to the request. The rejection serves as a notice to the client to pick a new

movie so negotiation can continue or a solution will not be found and the conclusion of

the request will be it cannot be filled.

2.   The examiner notes the features of the Official Notice are taken to be admitted

prior art because the applicant failed to traverse the examiner's assertion of official

notice for Claims 1, 4, 10, 15, 18, and 24.

Specification

3.   The disclosure is objected to because it contains an embedded hyperlink and/or

other form of browser-executable code. Applicant is required to delete the embedded

hyperlink and/or other form of browser-executable code. See MPEP § 608.01. The

hyperlink on page 11, line 3, must be removed from the specification.

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed
> or described as set forth in section 102 of this title, if the differences between the
> subject matter sought to be patented and the prior art are such that the subject
> matter as a whole would have been obvious at the time the invention was made
> to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was
> made.

5.   Claims 2-14 and 16-26 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Armstrong et al. "Armstrong" (WO 2000/60861) in view of Mizutani

(U.S. 6,115,740).

Regarding Claim 2, Armstrong discloses in figure 1 a video-on-demand system

that provides clients with access to movies on demand. Armstrong teaches, "a cached

disk storage system including a primary cache and disk storage for storing the movies"

by disclosing remote head-end 210R or "cached disk storage system" in figure 2, which

comprises primary storage partition 218 or "primary cache" and secondary storage

partition 219 or "disk storage" for storing movies. Armstrong teaches "a multiplicity of

data mover computers coupled to the cached disk storage system for streaming video

data from the cached disk storage system to clients in a data network, each of the data

mover computers having a local cache" by disclosing headend 210_2-210_n that comprise

primary storage 216_2-216_n or "local cache". Armstrong teaches, "wherein the movies

are ranked with respect to popularity..." by disclosing primary storage partition 218 is

used to store frequently requested video assets and secondary storage partition 219 is

used to store infrequently requested video assets (page 10, lines 1-10). Armstrong

teaches "wherein the data movers in the respective sets of data movers are configured

differently for providing more network interface resources for very popular movies and

for providing more local cache memory resources for less popular movies" by disclosing

headend 210_2-210_n comprise primary storage partition 218 is used to store frequently

requested video assets and secondary storage partition 219 is used to store

infrequently requested video assets. Armstrong fails to disclose a respective set of data

movers are pre-assigned for servicing video streams for each movie ranking. Mizutani

teaches using the predicted number of times that the content i is simultaneously

accessed at the time t is represented by Pi(t) and the equation for B(i,t) is used to

determine if content is lacking resources to determine how many streams on each

server are necessary to facilitate requests (Col. 6, lines 32-38). Figure 7 further

discloses pre-assigning content, C0 and C1, to servers SV0 and SV1 or "data movers".

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify Armstrong with the teachings of Mizutani in order to pre-

assign data movers to service video streams for the benefit of making more resources

available for more popular content.

As for Claim 3, Armstrong teaches "wherein for very popular movies, the very

popular movies are retained in their entirety in local cache of the data movers assigned

to service the very popular movies" by disclosing headend 210_n comprising primary

storage partition 218 used to store frequently requested video (page 10).

As for Claim 4, Armstrong fails to disclose the sets of data movers include a set

consisting of more than one data mover for servicing one very popular movie, a set

consisting of one data mover for servicing only one movie, and a set consisting of one

data mover for servicing a plurality of the movies. In a related art pertaining to video

distribution, Mizutani discloses in figure 16, which is admitted to be prior art by Mizutani,

show static video servers 110-112 servicing C0, video servers 111 and 112 provide

service for C1, while video servers 114 and 115 service C2. Video server 115 services

the remaining content, C2, C3, C4, and C5. Although the teachings of Mizutani are prior

art, his improvement over the admitted prior art is the ability to copy and move content

to other servers or "data movers" to provide more network resources. Accordingly, the

teachings of figure 16, multiple servers or "data movers" used to service popular movies

and a single server or "data mover" to service several unpopular movies can still be incorporated into Mizutani's preferred embodiment. Mizutani fails to explicitly show only one movie being service by only one video server. The applicants own admission provides evidence that it is notoriously well known in the art of video server systems, to use a single video server to service only one content stream. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Armstrong with the teachings of Mizutani by implementing a method whereas only one movie would be assigned to a data mover set consisting of only one data mover for the benefit of providing a dedicated source for popular movies.

As for Claim 5, Armstrong teaches "a series of at least some of the data movers include direct links for transfer of movie data from a data mover set servicing one movie ranking to a data mover set servicing a next...movie ranking and for transfer of movie data from the data mover set servicing the one movie ranking to a data mover set servicing a next...movie ranking" by disclosing in figure 2, the process of where infrequently requested video content is deemed desirable to have stored at other head-ends 210, the infrequently requested video asset is retrieved from the remote head-end 210R and is transmitted by the remote video stream server 214R across inter-server network 260, to the local head-ends 210. Armstrong fails to explicitly disclose transferring the movie data to a data mover servicing a next higher/lower movie ranking. The applicants own admission provides evidence that it is notoriously well known in the art to transfer movie data to servers servicing a next higher/lower movie ranking. Accordingly, It would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify Armstrong in order to transfer movie data from one data

mover to the next data mover servicing a higher/lower ranking movie for the benefit of

having servers with more or less resources service movies that need more or less

resources depending on popularity.

As for Claim 6, Armstrong fails to disclose data mover resources for a certain

number of video streams from the data movers to the clients are reserved for each of a

multiplicity of the movies. In a related art pertaining to video distribution, Mizutani

teaches in figure 16, a higher number of streams are reserved for more popular content,

like C0, and the streams are divided among a plurality of video servers as shown.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify Armstrong in view of Mizutani in order to reserve video

streams on each data mover for popular content for the benefit of making available

more streams for popular content and less streams for unpopular content.

As for Claim 7, Armstrong teaches "wherein the video file server is programmed

for locking in the primary cache a plurality of entire movies, and when there is a need for

servicing a more popular movie from the primary cache and there is insufficient free

cache memory for servicing the more popular movie from the primary cache,

transferring the servicing of a less popular movie from the primary cache to disk storage

in order to free cache memory for servicing the more popular movie from the primary

cache" by disclosing primary storage partition 218 on headend 210_n is used to store

frequently requested video (page 10, lines 1-2). Armstrong discloses moving videos

from secondary storage partition 219 to primary storage partition 218 if the video

exceeds a threshold value of requests from users (page 12, lines 3-14). Armstrong teaches when an unpopular movie becomes popular the movie is copied from secondary storage partition 219 and moved to primary storage partition 218. Further, Armstrong discloses when the video then drops below the threshold the video is then copied back to secondary storage partition 219 and deleted from primary storage partition 218 (page 12, line 23 to page 13, line 2).

As for Claim 8, Armstrong teaches "wherein the video file server is programmed for freeing primary cache memory by transferring the servicing of a least popular movie in the primary cache from the primary cache to the disk storage so long as no more than a certain number of video streams are being serviced concurrently from the least popular movie in the primary cache" by disclosing if a frequently requested video stored at the primary storage partition or "primary cache" becomes infrequently requested over a period of time, the video is transferred to secondary storage partition 219 or "disk storage" and the video asset is deleted from the primary storage partition 218 to prevent duplicate storage (page 12, line 23 to page 13, line 2).

As for Claim 9, Armstrong fails to disclose wherein the video file server is programmed for negotiating with a client for selection of an available movie during peak demand when resources are not available to select freely any movie in the disk storage for which a video stream can be started. In a related art pertaining to video distribution, Mizutani discloses in figure 7, dynamic allocating means 22 receiving a request from a client. As shown, delivering video server determining means 22a receives the initial request and if the requested content C0 cannot be delivered to the client, a contents

delivery rejecting means 22g indicates a rejection of the delivery of the content C0 to

the client. The negotiation occurs by the client makes a request content and the server

and client come to a conclusion when the server delivers the requested video or when

the server notifies the client that the requested content is not available. Mizutani fails to

specify whether this negotiation between the video server and client takes place during

peak demand. The examiner gives Official Notice that it is notoriously well known in the

art of video on demand, for negotiation of video content to occur during peak demand.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify Armstrong with the teachings of Mizutani to specify a

system where negotiation takes place with a client during the peak demand hours for

the benefit of providing communication to the client when resources are currently

unavailable in the video server for the client.

Regarding Claim 10, Armstrong discloses in figure 1 a video-on-demand system

that provides clients with access to movies on demand. Armstrong teaches, "a cached

disk storage system including a primary cache and disk storage for storing the movies"

by disclosing remote head-end 210R or "cached disk storage system" in figure 2, which

comprises primary storage partition 218 or "primary cache" and secondary storage

partition 219 or "disk storage" for storing movies. Armstrong teaches "a multiplicity of

data mover computers coupled to the cached disk storage system for streaming video

data from the cached disk storage system to clients in a data network, each of the data

mover computers having a local cache" by disclosing headend 210_2-210_n that comprise

primary storage 216_2-216_n or "local cache". Armstrong teaches "wherein the video file

server is programmed for locking in the primary cache a plurality of entire movies, and

when there is a need for servicing a more popular movie from the primary cache and

there is insufficient free cache memory for servicing the more popular movie from the

primary cache, transferring the servicing of a less popular movie from the primary cache

to disk storage in order to free cache memory for servicing the more popular movie from

the primary cache" by disclosing primary storage partition 218 on headend 210_n is used

to store frequently requested video (page 10, lines 1-2). Armstrong discloses moving

videos from secondary storage partition 219 to primary storage partition 218 if the video

exceeds a threshold value of requests from users (page 12, lines 3-14). Armstrong

teaches when an unpopular movie becomes popular the movie is copied from

secondary storage partition 219 and moved to primary storage partition 218. Further,

Armstrong discloses when the video then drops below the threshold the video is then

copied back to secondary storage partition 219 and deleted from primary storage

partition 218 (page 12, line 23 to page 13, line 2).

Considering Claim 11, the claimed elements of wherein the video file server is

programmed for freeing locked cache memory by transferring the servicing of the least

popular movie in the cache from the cache to the disk storage so long as no more than

a certain number of video streams are being concurrently serviced from the least

popular movie in the cache, corresponds with subject matter mentioned above in the

rejection of claim 8, and is likewise treated.

As for Claim 12, Armstrong teaches "wherein each of the data mover computers

has a local cache, the movies are ranked with respect to popularity…and the data

movers in the respective sets of data movers are configured differently for providing

more network interface resources for very popular movies and for providing more local

cache memory resources for less popular movies" by disclosing head-ends 210_2-210_n

comprise primary storage 216. The head-ends or "data movers" are configured to

provide more network interface resources for very popular movies by the use of primary

storage 216, which comprises primary storage partition 218. Primary storage partition

218 is used to store frequently requested movies or "popular movies". Less popular

movies are stored on secondary storage partition 219 or "local cache". Armstrong fails

to disclose a respective set of data movers are pre-assigned for servicing video streams

for each movie ranking. In a related art pertaining to video distribution, Mizutani teaches

in figure 7 discloses storing movies, represented by C0 and C1, to pre-assigned data

storing means or "data movers". Accordingly, it would have been obvious to one of

ordinary skill in the art at the time the invention was made to modify Armstrong with the

teachings of Mizutani in order to pre-assign data movers to service video streams for

the benefit of making more resources available for more popular content.

Considering Claim 13, the claimed elements of wherein a series of at least some

of the data movers include direct dedicated links for transfer of movie data from a data

mover set servicing one movie ranking to a data mover set servicing a next higher

movie ranking and for transfer of movie data from the data mover set servicing the one

movie ranking to the data mover set servicing a next lower movie ranking, corresponds

with subject matter mentioned above in the rejection of claim 5, and is likewise treated.

As for Claim 14, Armstrong fails to disclose data mover resources for a certain

number of video streams from the data movers to the clients are reserved for each of a

multiplicity of the movies. In a related art pertaining to video distribution, Mizutani

teaches in figure 16, that a higher number of streams are reserved for more popular

content (C0) and the streams are divided among a plurality of video servers as shown.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify Armstrong with the teachings of Mizutani in order to

reserve resources for a certain number of video streams on each data mover for the

benefit of providing as many resources as possible for popular content and limiting the

amount of streams available for unpopular content.

Regarding Claim 16, Armstrong teaches a method of providing video on demand

by disclosing the use of a plurality of head-ends 210 or "data movers" comprising of

primary storage 216 or "cached disk storage system". Armstrong further teaches the

use of a remote head-end 210R comprising primary storage partition 218 and

secondary storage partition 219. Armstrong teaches "ranking the movies with respect to

popularity" by disclosing primary storage partition 218 is used to store frequently

requested video and secondary storage partition 219 is used to store infrequently

requested video. Armstrong teaches "configuring differently the data movers in the

respective sets of data movers in order to provide more network interface resources for

very popular movies and for providing more local cache memory resources for less

popular movies" by disclosing each head-end 210 or "data mover" comprise primary

storage 216 which comprises primary storage partition 218 and secondary storage

partition 219. Primary storage partition 218 is used to store frequently requested video

and secondary storage partition 219 or "local cache" is used to store infrequently

requested video. Armstrong fails to disclose assigning a respective set of the data

movers to each movie ranking, and servicing video streams for each movie ranking with

the respective set of data movers assigned for servicing said video streams for said

each movie ranking. In a related art pertaining to video distribution, Mizutani teaches in

figure 7 storing movies, represented by C0 and C1, to pre-assigned data storing means

or "data movers". Further, Mizutani teaches "servicing video streams for each movie

ranking with the respective set of data movers assigned for servicing said video streams

for said each movie ranking" as disclosed in figure 16, a higher number of streams are

reserved for more popular content, like C0, and the streams are divided among a

plurality of video servers as shown. Accordingly, it would have been obvious to one of

ordinary skill in the art at the time the invention was made to modify Armstrong with the

teachings of Mizutani in order to pre-assign content to data movers for the benefit of

dedicating servers to specific content to better effectively manage resources.

Considering Claim 17, the claimed elements of wherein for very popular movies,

retaining the very popular movies in their entirety in the local cache of the data movers

assigned to service the very popular movies, corresponds with subject matter

mentioned above in the rejection of claim 3, and is likewise treated.

Considering Claim 18, the claimed elements of servicing a most popular movie

with an assigned data mover set consisting of more than one data mover, servicing only

one movie with an assigned data mover set consisting of one data mover, and servicing

a plurality of movies with an assigned data mover set consisting of one data mover, corresponds with subject matter mentioned above in the rejection of claim 4, and is likewise treated.

Considering Claim 19, the claimed elements of wherein a series of at least some of the data movers are linked by direct dedicated data links and the method includes transferring movie data from a data mover set servicing one movie ranking to a data mover set servicing a next higher movie ranking and transferring movie data from a data mover set servicing the one movie ranking to a data mover set servicing a next lower movie ranking, corresponds with subject matter mentioned above in the rejection of claim 5, and is likewise treated.

Considering Claim 20, the claimed elements of reserving data mover resources for a respective number of video streams from the data movers to the clients for each of a multiplicity of the movies, corresponds with subject matter mentioned above in the rejection of claim 14, and is likewise treated.

Considering Claim 21, the claimed elements of locking in the primary cache a plurality of entire movies, and when there is a need for servicing a more popular movie from the primary cache and there is insufficient free cache memory for servicing the more popular movie from the primary cache, transferring the servicing of a less popular movie from the primary cache to the disk storage in order to free primary cache memory for servicing the more popular movie from the primary cache, corresponds with subject matter mentioned above in the rejection of claim 7, and is likewise treated.

Considering Claim 22, the claimed elements of freeing primary cache memory by transferring the servicing of a least popular movie in the primary cache from the primary cache to the disk storage so long as no more than a certain number of video streams are being concurrently serviced from the least popular movie in the primary cache, corresponds with subject matter mentioned above in the rejection of claim 8, and is likewise treated.

Considering Claim 23, the claimed elements of the video file server negotiating with a client for selection of an available movie during peak demand when resources are not available to select freely any movie in the disk storage for which a video stream can be started, corresponds with subject matter mentioned above in the rejection of claim 9, and is likewise treated.

Regarding Claim 24, Armstrong teaches a method of providing video on demand by disclosing the use of a plurality of head-ends 210 or "data movers" comprising of primary storage 216 or "cached disk storage system". Armstrong further teaches the use of a remote head-end 210R comprising primary storage partition 218 and secondary storage partition 219. Armstrong teaches "locking in the cache a plurality of entire movies, and when there is a need for servicing a more popular movie from the cache and there is insufficient free cache memory for servicing the more popular movie from the cache, transferring the servicing of a less popular movie from the cache to the disk storage in order to free cache memory for servicing the more popular movie from the cache" by disclosing primary storage partition 218 on headend 210_n is used to store frequently requested video (page 10, lines 1-2). Armstrong discloses moving videos

from secondary storage partition 219 to primary storage partition 218 if the video

exceeds a threshold value of requests from users (page 12, lines 3-14). Armstrong

teaches when an unpopular movie becomes popular the movie is copied from

secondary storage partition 219 and moved to primary storage partition 218. Further,

Armstrong discloses when the video then drops below the threshold the video is then

copied back to secondary storage partition 219 and deleted from primary storage

partition 218 (page 12, line 23 to page 13, line 2).

Considering Claim 25, the claimed elements of freeing locked cache memory by

transferring the servicing of a least popular movie in the cache from the cache to the

disk storage so long as no more than a certain number of video streams are being

concurrently serviced from the least popular movie in the cache, corresponds with

subject matter mentioned above in the rejection of claim 8, and is likewise treated.

Considering Claim 26, the claimed elements of wherein each of the data mover

computers has a local cache, the method includes ranking the movies with respect to

popularity, assigning a respective set of the data movers for servicing video streams for

each movie ranking, and configuring the data movers in the respective sets of data

movers differently for providing more network interface resources for very popular

movies and for providing more local cache memory resources for less popular movies,

corresponds with subject matter mentioned above in the rejection of claim 12, and is

likewise treated.

Conclusion

6.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.

>   U.S. Pat. No. 6,721,794 to Taylor et al. – A method of data management
>
>   for efficiently storing and retrieving data in response to user access
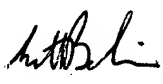>
>   requests.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Chris Parry whose telephone number is (571) 272-8328.

The examiner can normally be reached on Monday through Friday, 8:30 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, John Miller can be reached on (571) 272-7353. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

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For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Examiner's Initials: *CLP*

October 24, 2005

Patent Examiner

Art Unit 2614